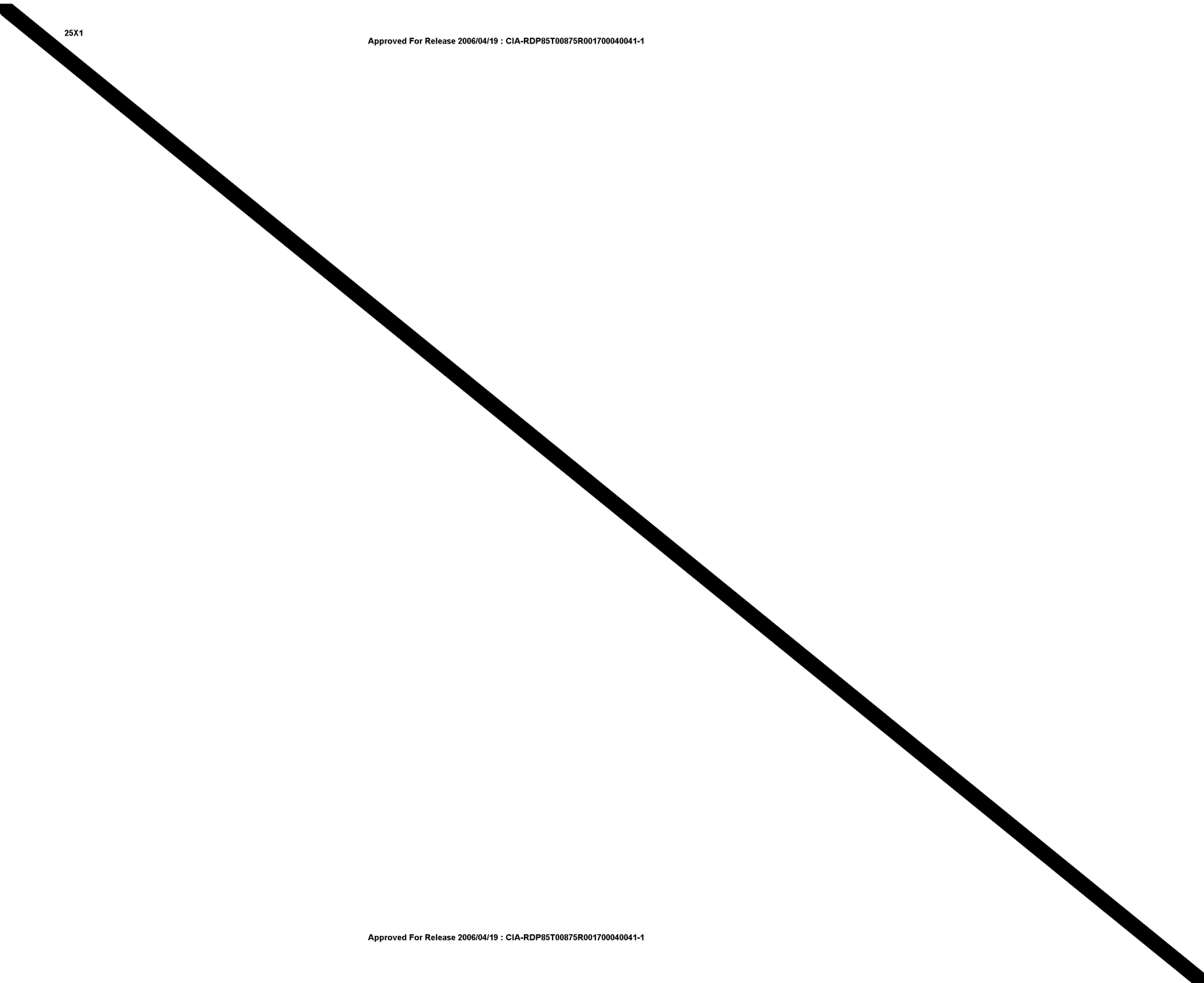

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DIRECTORATE OF
INTELLIGENCE

Intelligence Memorandum

North Sea Oil: Implications for Britain in the Seventies

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November 1972

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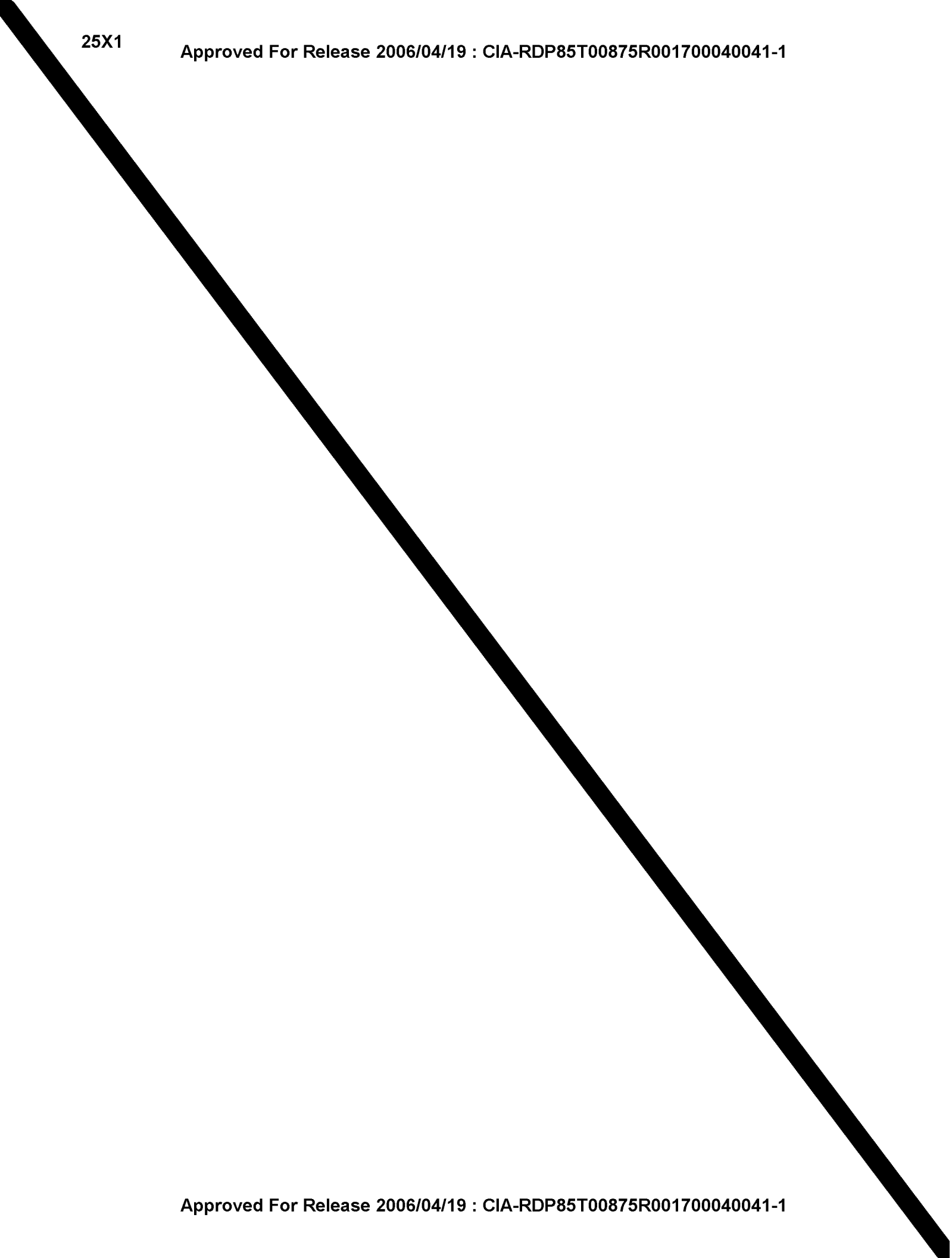

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CENTRAL INTELLIGENCE AGENCY
Directorate of Intelligence
November 1972

INTELLIGENCE MEMORANDUM

NORTH SEA OIL: IMPLICATIONS FOR BRITAIN IN THE SEVENTIES

Summary and Conclusions

1. At the rates of North Sea production currently forecast, Britain's dependence on imported petroleum – chiefly from the Middle East and North Africa – will be reduced substantially, and foreign exchange savings of $2 billion to $3.5 billion annually should be realized in the late 1970s. Also, total royalty payments by the oil companies to the UK Treasury will approach $450 million annually by 1980.

2. The reserves of Britain's North Sea sector are large – probably from 3.6 billion to 7.2 billion barrels of recoverable crude oil and 50 trillion cubic feet of natural gas. Production in 1980 is expected to reach 2 million barrels a day (b/d) of oil and about 4 billion cubic feet a day (cf/d) of natural gas – together representing about half of the UK's projected energy consumption.

3. The ongoing shift from coal to oil and gas will be stepped up during this decade, exacerbating the already high unemployment in the UK's coal-mining regions. The benefits of North Sea production, however, including a marked reduction in Britain's dependence on oil imports from the periodically unstable Middle East, will vastly offset the costs of any adjustment problems.

Note: This memorandum was prepared by the Office of Economic Research and coordinated within the Directorate of Intelligence.

Discussion

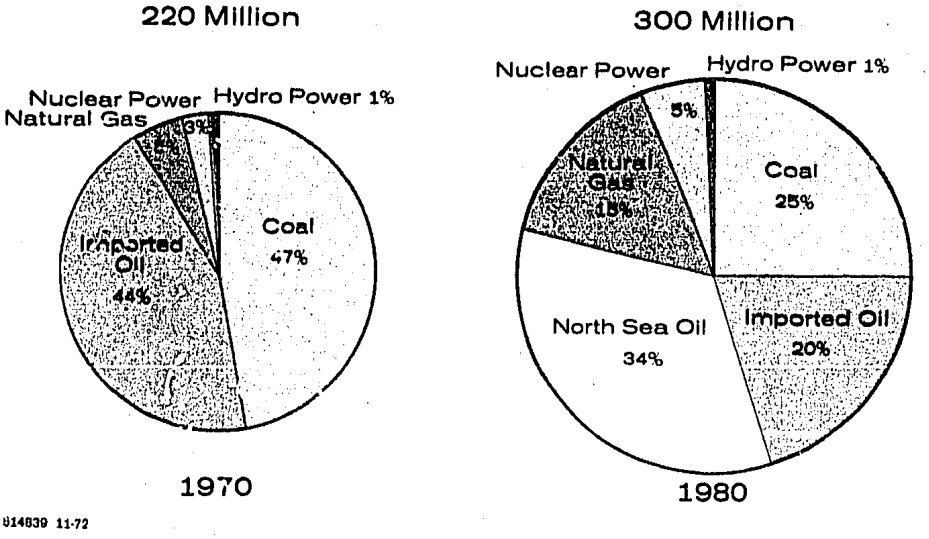
Background

4. The United Kingdom is heavily dependent on oil imports, which in 1970 met 44% of the country's energy requirements (see Figure 1). The North Sea aside, domestic production of oil and gas is negligible. The country's nuclear power capability is still relatively small, and coal output has been declining – largely because of rising production cost. Consequently, Britain's dependence on imported energy has been growing faster than energy consumption generally.

Figure 1

United Kingdom: Sources of Primary Energy

Totals in Tons of Oil Equivalents



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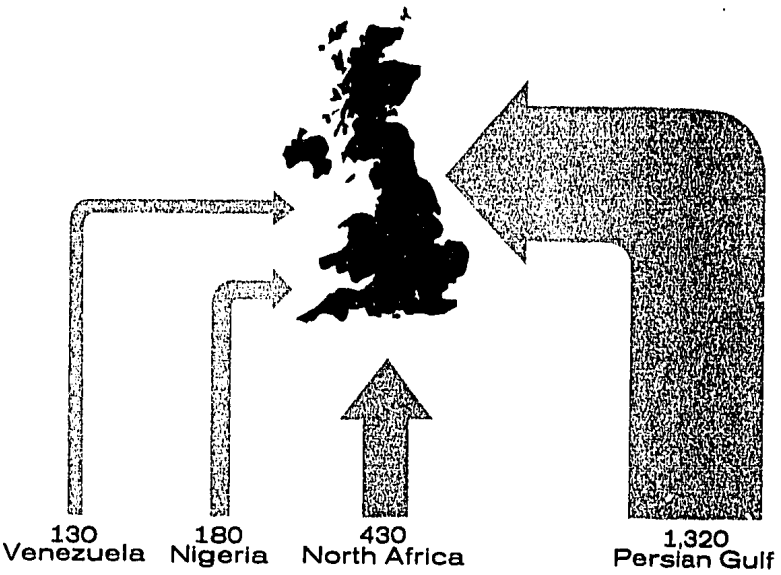
5. This dependence on imports is complicated by the fact that more than 80% of Britain's oil imports originate in countries that are often inimical to UK interests. The Persian Gulf area accounts for 62% of UK oil imports, and North Africa accounts for another 20% (see Figure 2). The remainder comes mostly from Nigeria and Venezuela. Rising oil imports coupled with escalating prices has steeply increased foreign exchange outlays for oil – to nearly $2.5 billion in 1971.

Figure 2

United Kingdom:
Major Sources of Oil Imports, 1971

Thousand Barrels Per Day



A New Source: The North Sea

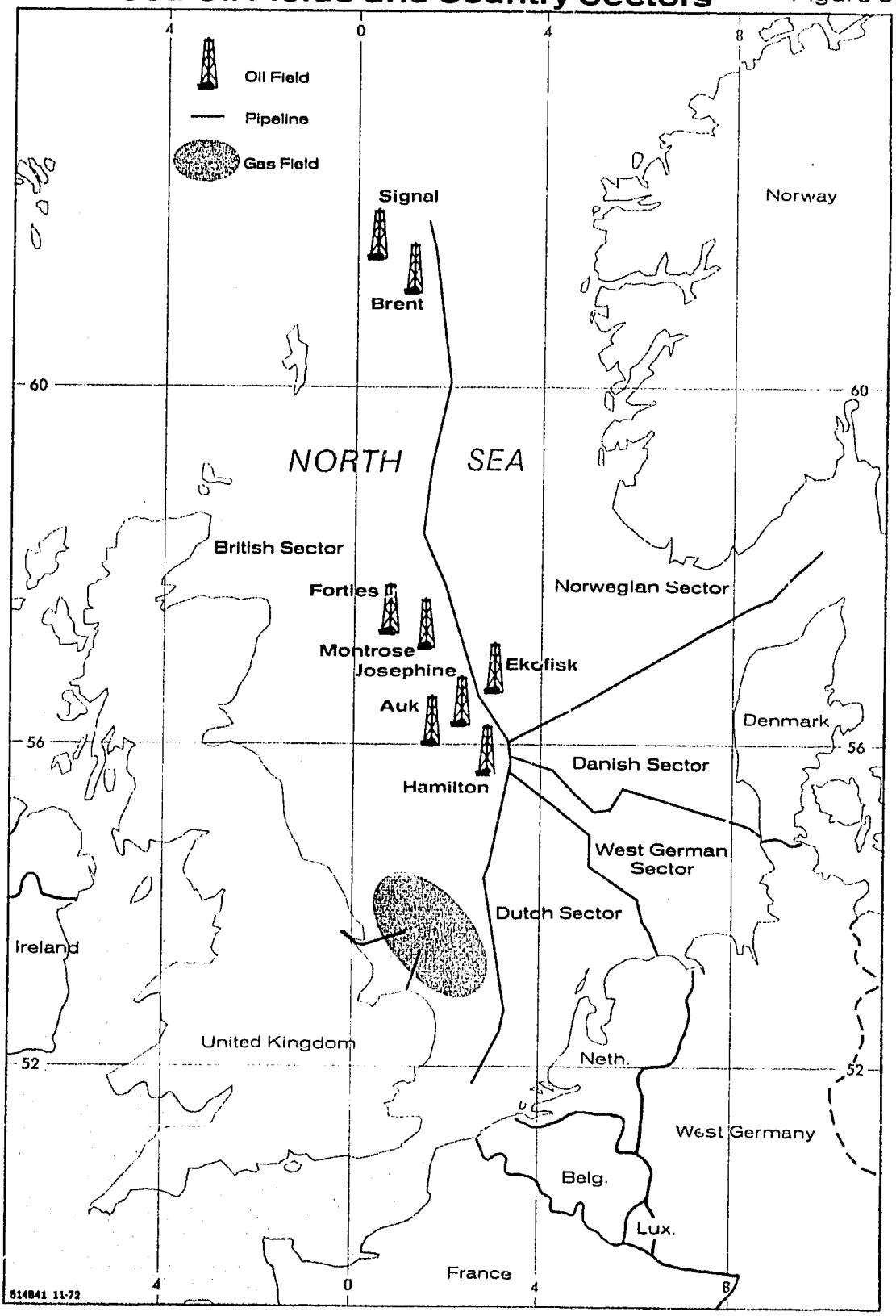
6. The North Sea promises to be a major oil and gas producing area. Since it offers an alternative to Middle East oil, as well as obvious savings in transportation costs, interest in the area's resources is intense. The North Sea thus has become one of the world's more active oil exploration areas; more than 25 exploration rigs were working there in the summer of 1972, and some 400 exploratory holes have already been drilled. Nearly all major oil companies have exploration leases in various national sectors of the North Sea (see Figure 3).

7. To date, there have been 15 North Sea oil discoveries. Seven are in the UK sector, six in the Norwegian sector, one in the Danish sector, and one in the Dutch sector. While only Norway's Ekofisk field is now producing (at a rate of about 40,000 b/d), major plans have been announced for two large fields off Scotland – the Forties, to be developed by British Petroleum, and Auk, a Sheil-ESSO venture.

8. Major gas deposits have also been found and some are producing, notably Hewett, West Sole, Leman Bank, and Indefatigable, which now provide Britain about 1.33 billion cf/d. The gas, piped ashore through

North Sea Oil Fields and Country Sectors

Figure 3



30-inch pipelines to Humbler, Bacton, and Theedlethorp in northeast England, provides about two-thirds of current UK consumption of natural and manufactured gas.

9. While only gas is now being produced in the UK sector, there is a potential for large-scale oil production as well as increased gas production. Recoverable oil reserves are set at 3.6 billion to 7.2 billion barrels, and natural gas reserves are estimated in excess of 50 trillion cubic feet. In comparison, Alaska's North Slope reserves are 10 billion barrels of oil and 26 trillion cubic feet of gas.

10. Estimates of future North Sea production vary widely. London officially estimates that oil production from the UK sector will reach 1.5 million b/d by 1980. This estimate, however, is regarded by most authorities as conservative. Most estimates for the UK sector approximate 2 million b/d. Gas production is expected to reach about 4 billion cf/d in 1980. By comparison, the UK's inland production amounted to 1,600 b/d of oil and 0.48 billion cf/d of manufactured gas in 1971.

11. While North Sea investment costs per barrel per day of capacity are about $2,500, or ten times the Middle East level, they are still below US and Canadian development costs. British Petroleum has requested bids on producing facilities for its Forties field, where it expects ultimately to invest nearly $1 billion. Shell-ESSO will invest a similar amount in the Auk field. Projected output from the entire North Sea will require an estimated $12 billion investment over the next ten years.

12. The Norwegian sector should produce about 500,000 b/d by the mid-1970s. A deep crevice in the seabed between the field and the Norwegian coast, however, will probably prevent piping this output to Norway. Another method of getting the oil to shore is the loading of tankers from seabed storage tanks similar to those used in the Persian Gulf. It is likely, however, that much of the Norwegian oil will be piped ashore in Britain. Because of the cost and complexity of liquefying gas for storage and shipment, it appears almost certain that Norwegian gas will be piped to and used in Britain.

Balance of Payments

13. Imported oil cost the United Kingdom nearly $2.5 billion in 1971, and, in the absence of North Sea oil production, the outlay would exceed $5 billion in 1980. But Britain's North Sea production of crude oil at the anticipated rate of 2 million b/d in 1980, if all is consumed in the United Kingdom, would reduce the Middle East-North Africa share of the UK's total primary energy supplies to 14%, from about 36% at present, and save Britain more than $3.6 billion (see the tabulation) in foreign exchange.

	1970	1972	1975	1980
Crude oil consumption (million b/d)	2.0	2.3	2.5	3.2
Natural gas consumption (billion cf/d)	1.2	1.6	2.6	5.6
Balance-of-payments savings (Million US $)[a]	—	—	1,100	3,600
C.I.F. cost of imported oil (US $ per barrel)	2.30	3.17	3.76[b]	5.00[b]
North Sea production (million b/d)	—	—	0.8	2.0
British Treasury revenues from North Sea oil royalties (million US $)[c]	—	—	140	450

a. North Sea production times cost of imported oil.
b. Estimated maximum cost.
c. The royalty rate (12.5%) times the value of North Sea production, which is assumed to be equal to the balance-of-payments savings it provides.

For the entire decade of the 1970s, rising output of North Sea oil should reduce UK foreign exchange costs by a cumulative total of nearly $15 billion, with most of the benefit accruing after 1975.

Government Revenues

14. The United Kingdom is receiving sizable proceeds from auctioning "blocks" of its North Sea sector to oil companies for exploration. This practice, begun in August 1971, already has yielded the Treasury more than $60 million. When production begins, government receipts will be much greater. The oil companies must pay a royalty of 12.5% of the wellhead value of any petroleum produced. On the basis of projected production and prices, royalty income is expected to mount rapidly and reach $450 million annually by 1980. Additional small revenues will be generated by rental fees paid by the companies on the various blocks.

Petroleum Versus Coal

15. The North Sea fields will further change the pattern of Britain's primary energy consumption. In particular, the downward trend in coal use will be accelerated. In 1980, coal will probably make up 25% of energy consumption, compared with nearly 50% in 1970.

16. The rate at which oil and gas will be substituted for coal depends on the priorities the United Kingdom accords several conflicting goals. On the basis of recent price trends and environmentalists' demands that coal be made cleaner burning, it appears that oil and gas will quickly widen their cost advantage over coal. There is concern, however, about preventing depletion of the North Sea fields prior to the expected advent of nuclear energy as an important energy source in the late 1980s. Up to now, Britain's nuclear power program has encountered troublesome delays and, as a result, is not expected to provide a major share of the country's energy needs until later in the century. In order to maintain continued flows of oil and gas from the North Sea until adequate supplies of nuclear power are assured, Britain probably will exploit the resource more slowly than short-term cost considerations would dictate. Political and social welfare considerations will also tend to slow the rate of substitution of oil and gas for coal, because most British coal mines are located in regions of high unemployment.

Regional Effects

17. Scotland's economy will receive the biggest boost from North Sea oil and gas development. Almost all the support installations for offshore operations will be located in Scotland. Marathon Manufacturing, Inc. of the United States is in the process of taking over one of Scotland's floundering shipyards where the company plans to build offshore platforms. One planned pipeline from the offshore fields will come ashore in Scotland, and some local refineries are to be expanded. The North Sea development, at its peak, will likely directly create more than 10,000 new jobs in Scotland; the indirect effects on the regional economy will create many additional jobs.

18. Regions that are heavily dependent on coal mining will be adversely affected by North Sea oil. Unfortunately, in northern England, Wales, and Scotland -- regions where coal mining is important -- unemployment recently has averaged 6%. Since the 1950s the government has been providing assistance such as development grants and re-employment programs to the hardest hit areas, but these programs have met with little success. Early in 1972 the British government reorganized its regional assistance programs. No special measures have yet been adopted, however, to deal with dislocations caused by development of the North Sea resources.